

## **Multiteide Project: Multiparametric characterization of the activity of Teide-Pico Viejo volcanic system**

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Teide-Pico Viejo complex stands for one of the major natural volcanic hazards in the Canary Islands, due to the expected types of eruptions in the area and the high number of inhabitants in Tenerife Island. Therefore, it is necessary to have a volcanic alert system able to afford a precise assessment of the current state of the complex. For this purpose, the knowledge of the expected signals at each volcanic activity level is required. Moreover, the external effects that can affect the measurements shall be distinguished, external influences as the atmosphere are qualitatively known but have not been quantified yet.

The objective of the project is to collect, analyze and jointly and continuously evaluate over time geophysical, geodetic, geochemical and meteorological data from the Teide-Pico Viejo complex and its surroundings. A continuous multiparametric network have been deployed in the area, which, together with the data provided by the Volcano Monitoring Network of the Instituto Geográfico Nacional (IGN) and data from other institutions will provide a comprehensive set of data with high resolution in both space and time. This multiparametric network includes a seismic array, two self-potential lines for continuous measurements, five magnetometers and two weather stations. The network will be complemented with 8 CGPS stations, one tiltmeter, 10 seismic stations, and four thermometric stations on the fumaroles of Teide volcano that IGN already manage in Tenerife. The data will be completed with the results from different repeated surveys of self potential, soil temperature and CO<sub>2</sub> diffuse flux in several pre-established areas on top of Teide throughout the entire duration of project.

During the project, new computation tools will be developed to study the correlation between the different parameters analyzed. The results obtained will characterize the possible seasonal fluctuations of each parameter and the variations related to meteorological phenomena. In addition, they will allow identifying the response of all the analyzed parameters to specific events that are traditionally studied with a single technique, such as short episodes of tremor (sporadically registered in Teide-Pico Viejo surroundings) or changes in activity of the hydrothermal system of the volcanic complex.

We present here the first multiparametric results obtained from the project, including locations with the seismic array, CO<sub>2</sub> and temperature maps of Teide fumaroles zones and magnetometric measurements.